

WHAT IS CLAIMED IS:

1 ~~1. An image forming apparatus for forming an image based on half-tone~~  
2 data with a coloring agent, comprising:  
3 a tone correction section for receiving input tone level data with regard to a  
4 color system of the coloring agent, and for applying a tone correction for  
5 compensating gamma characteristic variation of the image forming device with  
6 respect to the input tone level data to generate output tone level data corrected  
7 by the tone correction; and  
8 a half-toning section for applying a half-toning with respect to the  
9 output tone level data to generate the half-tone data.

1 2. The image forming apparatus as set forth in claim 1, wherein the  
2 number of tone levels contained by the output tone level data is greater than  
3 that of the input tone level data.

1 3. The image forming apparatus as set forth in claim 1, further  
2 comprising:  
3 a correction information generating section for measuring an optical  
4 density of a test image printed in a test printing operation to obtain the gamma  
5 characteristics of the image forming apparatus; and for generating tone  
6 correction information to be utilized by the tone correction section.

1 4. The image forming apparatus as set forth in claim 3, wherein the  
2 correction information generating section generates the tone correction

3 ~~information from the optical density of the test image by calculation.~~

1 5. The image forming apparatus as set forth in claim 3, wherein the half-  
2 tone data is generated such that a bit number thereof assigned to one pixel of  
3 one color in the test printing operation is greater than that in a usual printing  
4 operation for printing an image to be appreciated.

1 6. The image forming apparatus as set forth in claim 3, wherein the  
2 half-toning section applies the half-toning with a screen method using different  
3 screens in the test printing operation and in a usual printing operation for  
4 printing an image to be appreciated, and

5 wherein the screen frequency of the screen used in the test printing  
6 operation is greater than that used in the usual printing operation.

1 7. An image forming apparatus for compensating variation of gamma  
2 characteristics thereof by a tone correction, comprising:

3 a usual printing operation for printing an image to be appreciated;

4 a test printing operation for printing a test image for obtaining gamma  
5 characteristics of the image forming apparatus;

6 a correction information generating section for measuring an optical  
7 density of the test image to generate tone correction information by calculation;

8 a tone correction section for applying the tone correction with respect  
9 to input tone level data using the tone correction information to generate output  
10 tone level data in both of the usual printing operation and the test printing  
11 operation; and

12 a half-toning section for applying a half-toning with respect to the  
13 output tone level data to generate half-tone data to be used for the image  
14 forming.

1 8. An image forming apparatus for compensating variation of gamma  
2 characteristics thereof by a tone correction, comprising:

3 a usual printing operation for printing an image to be appreciated;

4 a test printing operation for printing a test image for obtaining gamma  
5 characteristics of the image forming apparatus;

6 a correction information generating section for measuring an optical  
7 density of the test image to generate tone correction information;

8 a tone correction section for applying the tone correction with respect  
9 to input tone level data using the tone correction information to generate output  
10 tone level data in both of the usual printing operation and the test printing  
11 operation; and

12 a half-toning section for applying a half-toning with respect to the  
13 output tone level data to generate half-tone data to be used for the image  
14 forming,

15 wherein a bit number, which is assigned to one pixel of one color, of  
16 the half-tone data outputted from the half-toning section in the test printing  
17 operation is greater than that in the usual printing operation.

1 9. An image forming apparatus for compensating variation of gamma  
2 characteristics thereof by a tone correction, comprising:

3 a usual printing operation for printing an image to be appreciated;

4 a test printing operation for printing a test image for obtaining gamma  
5 characteristics of the image forming apparatus;

6 a correction information generating section for measuring an optical  
7 density of the test image to generate tone correction information by calculation;

8 a tone correction section for applying the tone correction with respect  
9 to input tone level data using the tone correction information to generate output  
10 tone level data in both of the usual printing operation and the test printing  
11 operation; and

12 a half-toning section for applying a half-toning with respect to the  
13 output tone level data to generate half-tone data to be used for the image  
14 forming with a screen method using different screens in the test printing  
15 operation and in the usual printing operation,

16 wherein the screen frequency of the screen used in the test printing  
17 operation is greater than that used in the usual printing operation.

10. An image forming method applied to an image forming apparatus for  
2 forming an image based on half-tone data with a coloring agent, comprising the  
3 steps of:

4 obtaining input tone level data with regard to color system of the coloring agent;  
5 applying a tone correction for compensating gamma characteristic  
6 variation of the image forming device with respect to the input tone level data to  
7 generate output tone level data;

8 applying a half-toning with respect to the output tone level data to  
9 generate the half-tone data.

1 ~~11. The image forming method as set forth in claim 10, wherein the tone~~  
2 correction is applied such that the number of tone levels contained by the  
3 output tone level data is greater than that of the input tone level data.

1 12. The image forming method as set forth in claim 10, further comprising  
2 the steps of:

3 measuring an optical density of a test image printed in a test printing  
4 operation to obtain the gamma characteristics of the image forming apparatus;  
5 and

6 generating tone correction information to be utilized in the step of  
7 applying the tone correction.

1 13. The image forming method as set forth in claim 12, wherein the tone  
2 correction information is generated from the optical density of the test image by  
3 calculation.

1 14. The image forming method as set forth in claim 12, wherein the half-  
2 tone data is generated such that a bit number thereof assigned to one pixel of  
3 one color in the test printing operation is greater than that in a usual printing  
4 operation for printing an image to be appreciated.

1 15. The image forming method as set forth in claim 12, wherein the half-  
2 toning is applied with a screen method using different screens in the test  
3 printing operation and in a usual printing operation for printing an image to be  
4 appreciated, and

5 ~~wherein the screen frequency of the screen used in the test printing~~  
6 ~~operation is greater than that used in the usual printing operation.~~

1 16. An image forming method applied to an image forming apparatus for  
2 compensating variation of gamma characteristics thereof by a tone correction  
3 which comprises a usual printing operation for printing an image to be  
4 appreciated, and a test printing operation for printing a test image for obtaining  
5 the gamma characteristics, comprising the steps of:

6 measuring an optical density of the test image;

7 generating tone correction information from the optical density by  
8 calculation;

9 applying the tone correction with respect to input tone level data using  
10 the tone correction information to generate output tone level data in both of the  
11 usual printing operation and the test printing operation; and

12 applying a half-toning with respect to the output tone level data to  
13 generate half-tone data to be used for the image forming.

1 17. An image forming method applied to an image forming apparatus for  
2 compensating variation of gamma characteristics thereof by a tone correction  
3 which comprises a usual printing operation for printing an image to be  
4 appreciated, and a test printing operation for printing a test image for obtaining  
5 the gamma characteristics, comprising the steps of:

6 measuring an optical density of the test image;

7 generating tone correction information from the optical density by  
8 calculation;

applying the tone correction with respect to input tone level data using the tone correction information to generate output tone level data in both of the usual printing operation and the test printing operation; and

applying a half-toning with respect to the output tone level data to generate half-tone data to be used for the image forming such that a bit number thereof assigned to one pixel of one color in the test printing operation is greater than that in the usual printing operation.

18. An image forming method applied to an image forming apparatus for compensating variation of gamma characteristics thereof by a tone correction which comprises a usual printing operation for printing an image to be appreciated, and a test printing operation for printing a test image for obtaining the gamma characteristics, comprising the steps of:

measuring an optical density of the test image;

generating tone correction information from the optical density by calculation;

applying the tone correction with respect to input tone level data using the tone correction information to generate output tone level data in both of the usual printing operation and the test printing operation; and

applying a half-toning with respect to the output tone level data to generate half-tone data to be used for the image forming with a screen method using different screens in the test printing operation and in the usual printing operation,

wherein the screen frequency of the screen used in the test printing operation is greater than that used in the usual printing operation.

1 ~~19. A computer-readable recording medium for recording a program~~  
2 causing a computer to execute an image forming method applied to an image  
3 forming apparatus for forming an image based on half-tone data with a coloring  
4 agent, comprising the steps of:

5 obtaining input tone level data with regard to color system of the coloring agent;  
6 applying a tone correction for compensating gamma characteristic  
7 variation of the image forming device with respect to the input tone level data to  
8 generate output tone level data;

9 applying a half-toning with respect to the output tone level data to  
10 generate the half-tone data.

1 20. The computer-readable recording medium as set forth in claim 19,  
2 wherein the tone correction is applied such that the number of tone levels  
3 contained by the output tone level data is greater than that of the input tone  
4 level data.

1 21. The computer-readable recording medium as set forth in claim 20, the  
2 image forming method executed by the program further comprising the steps  
3 of:

4 measuring an optical density of a test image printed in a test printing  
5 operation to obtain the gamma characteristics of the image forming apparatus;  
6 and

7 generating tone correction information to be utilized in the step of  
8 applying the tone correction



- 1 ~~22. The image forming method as set forth in claim 21, wherein the tone~~  
2 correction information is generated from the optical density of the test image by  
3 ~~calculation.~~

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